INTERNATIONAL MONETARY FUND AND
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LAO PEOPLE'S DEMOCRATIC REPUBLIC

Joint IMF/World Bank Debt Sustainability Analysis Under the Debt Sustainability Framework for Low-Income Countries[1]

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Lao P.D.R.'s risk of debt distress[2] is still assessed to be high, as one public external debt stock indicator is expected to remain above policy-dependent indicative thresholds over the medium term under the baseline scenario, notwithstanding the recent downward trend in debt indicators and projected strong growth over the medium term. However, debt service ratios remain comfortably within the policy-dependent indicative thresholds, even under the stress tests, due to the high level of concessionality of official borrowing. Debt management needs to be strengthened as a matter of priority and before the government signs any new loan agreements, it would be important to first carefully assess the implications for macroeconomic stability and external and public debt sustainability of the large amount of undisbursed loan commitments from China that appear to have been signed in recent years.

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[1] This DSA was prepared jointly by the IMF and World Bank, in consultation with the Asian Development Bank (AsDB). The debt data underlying this exercise were provided by the Lao P.D.R. authorities.

[2] The low-income country debt sustainability framework (LIC DSF) recognizes that better policies and institutions allow countries to manage higher levels of debt, and thus the threshold levels for debt indicators are policy-dependent. In the LIC-DSF, the quality of a country's policies and institutions is measured by the World Bank's Country Policy and Institutional Assessment (CPIA) index and classified into three categories: strong, medium, and weak. Lao P.D.R.'s policies and institutions, as measured by the CPIA, averaged 3.253 over the past three years. Since it is the first year that Lao P.D.R. is above the threshold of "medium performers" (3.25) and the breach is less than 0.05, Lao P.D.R. is still classified in the "weak performer" category according to the "Staff Guidance Note on the Application of the Joint Fund-Bank Debt Sustainability Framework for Low-Income Countries (www.imf.org/external/np/pp/eng/2010/012210.pdf)." Therefore, the relevant indicative thresholds for this category are: 30 percent for the PV of debt-to-GDP ratio, 100 percent for the PV of debt-to-exports ratio, 200 percent for the PV of debt-to-revenue ratio, 15 percent for the debt service-to-exports ratio, and 25 percent for the debt service-to-revenue ratio. These thresholds are applicable to public and publicly guaranteed external debt.

I. BACKGROUND

1. **The results of this DSA are similar to those of the previous DSA.**[3] However, the improved outlook for revenue and exports has lowered related debt-burden indicators. The primary difference is that the present value (PV) of debt-to-revenue ratio is now below the threshold level under the baseline scenario. Compared to the previous DSA, the baseline assumptions for economic growth, revenues, and exports are somewhat more optimistic. This affects longer-term debt dynamics positively. However, the projected rate of external debt accumulation is higher during 2012–16, reflecting increased borrowing from non-Paris Club bilateral creditors, mainly China. As a result, public external debt stock indicators remain flat during those years despite strong growth of GDP, exports, and revenue. The calculations are based on a discount rate of 4 percent, unchanged from last year's DSA.

2. **Key indicators of Lao P.D.R.'s external public and publicly guaranteed (PPG) debt stock have improved as a result of strong macroeconomic performance.** The PV of debt was 37 percent of GDP or 86 percent of exports at end-2010, down from 43 percent of GDP or 129 percent of exports at end-2009. Strong economic growth, appreciation of the kip, and favorable external conditions all contributed to the decline in the ratio of external PPG debt-to-GDP over the past few years. The stock of external PPG debt increased in nominal terms to US$3.5 billion in 2010 from US$2.1 billion in 2005, but declined to 51.8 percent of GDP in 2010 from 82 percent of GDP in 2005. The debt of state-owned enterprises (SOEs) is included into the PPG debt, to the extent possible. The private external debt—which totaled 40.4 percent of GDP at end-2010—is mostly related to mining, hydropower, and construction projects.

Lao P.D.R.: Stock of Public and Publicly Guaranteed External Debt at End-2010

	In billions of U.S. Dollar	As a Share of Total External Debt	In percent of GDP
Total	3.5	100.0	51.8
Multilateral	2.1	60.2	31.2
Bilateral	1.2	35.7	18.5
Commercial 1/	0.1	4.1	2.1

Source: Lao P.D.R. authorities; and IMF and World Bank staff estimates.
1/ Includes direct borrowing by state-owned enterprises on nonconcessional terms.

3. **Around 60.2 percent of Lao P.D.R.'s external PPG debt is held by multilateral creditors**, mainly the Asian Development Bank (AsDB, 35 percent) and the International Development Association (IDA, 19 percent). About 35.7 percent is held by bilateral creditors—mainly China, Russia, Thailand, and Japan.[4] Besides, India and Korea also increased their lending to Lao P.D.R. in the past three years. The remaining 4.1 percent of PPG external debt comprises external debt incurred by public entities on nonconcessional

[3] See IMF Country Report No. 11/44 and www.worldbank.org.

[4] The Soviet-era debt owed to the Russian Federation has been under negotiation since 2007. The Lao P.D.R. authorities are seeking debt relief comparable to what was granted to other LICs. The authorities reported that negotiations continue.

terms and guaranteed by the government, mainly for hydropower development and electricity generation, including financing equity stakes. The increasing presence of emerging-market creditors, particularly from China, underscores the need to strengthen debt management capacity, particularly to ensure that debt sustainability considerations are taken into account when new debt is contracted.[5] A mitigating factor for Lao P.D.R.'s external debt burden lies in the prospective returns on the hydropower and mining projects that have been financed in part by external PPG debt. While the projects face construction and implementation challenges, the long-term power purchase agreements that are signed for these projects and resulting government revenues in the form of royalties, dividends, and profit tax payments arguably reduce the risk of debt distress.

Lao P.D.R.: External Public Debt Indicators at End-2010

	Indicative thresholds	End-2010
Present value of debt, as a percent of:		
GDP	30	36.6
Exports	100	85.9
Revenue	200	222.1
Debt service, as a percent of:		
Exports	15	4.5
Revenue	25	11.5

Source: Lao P.D.R. authorities; and IMF and World Bank staff estimates.

4. **Recorded domestic public debt rose to 7 percent of GDP in 2010, up from 5.6 percent of GDP in 2009** as the central bank disbursed more loans to finance local government's off-budget infrastructure projects. Lending from the Bank of Lao P.D.R. (BoL) represents 82 percent of the recorded total domestic debt, with the remainder comprising of government bonds, in particular those related to the recapitalization of state-owned commercial banks. Total PPG domestic and external debt stood at 58.8 percent of GDP in 2010. The stock of lending from the Bank of Lao P.D.R. to local governments, which is included in the domestic public debt data, is expected to peak in 2012. This expectation is based on the authorities' 2009 announcement that the BoL would stop signing new loan contracts with local governments. However, no information is available on the amount of undisbursed loan commitments and interest and amortization schedules.

II. Underlying Debt Sustainability Analysis Assumptions

5. **Box 1 summarizes the medium-term macroeconomic framework underlying the DSA.** Most notably, the baseline scenario—which is based on current policies—projects annual average growth for the next six years at 7.7 percent, in line with the average for the last five years and the authorities' targets in the 7th five-year plan. Continuing recent trends, growth would be increasingly supported by large resource (mostly mining and hydropower) projects and to a lesser extent by the improved tourism outlook.[6] The economy is also

[5] As of end-2010, China signed 24 loan agreements with Lao P.D.R., amounting to US$1.35 billion. Of this total amount about US$958 million remained undisbursed. Apart from the fact that they include a US$90 million loan for a hydro project, staff has no information on the projects associated with the loan agreements signed with China, the approximate disbursement schedules, and the currency composition of the debt.

[6] Lao P.D.R. will host the Asia-Europe Summit in November 2012, and has contracted various FDI-financed projects to develop hotels and other infrastructure that will be used for this event.

projected to be supported by agriculture and manufacturing, reflecting increased investment in these two sectors. Stable macroeconomic conditions and continuing reforms to further the transition to a market economy will also continue to contribute to steady growth.

6. **External financing is assumed to remain largely on concessional terms over the medium term.** Over the long term, grant financing decreases with economic development and graduation from low-income status could be achieved in the second half of the projection period. The participation of nontraditional bilateral creditors is expected to increase compared to the previous DSA. The previous DSA assumed total disbursement of US$354 million from China during 2011–16, while this DSA assumes US$958 million for the same period, reflecting newly signed loan contracts with China.

III. DEBT SUSTAINABILITY

A. External Debt Sustainability Analysis

7. **Under the baseline scenario, the PV of debt-to-GDP ratio remains above the policy-dependent indicative debt burden thresholds until 2019** (Figure 1 and Table 1). The PV of debt-to-revenue ratio has improved to below the threshold in the baseline scenario. Unlike in last year's DSA, all three external debt stock indicators are projected to remain basically flat until about 2018 reflecting about US$600 million in additional loan disbursements from China during 2011–16. Debt service ratios (both as a share of exports and government revenues) remain well below indicative thresholds throughout the 20-year projection period, despite falling grant-equivalent financing.

8. **External debt sustainability is most vulnerable to a depreciation of the nominal exchange rate and lower export growth**.[7] Table 3 and Figure 1 illustrate how a one-off 30 percent depreciation of the kip would lead to a sharp rise in the PV of debt-to-GDP and the PV of debt-to-revenue ratios. A decline in export growth (by one standard deviation in 2012–13) would push the PV of debt-to-exports to 151 percent by 2014 and stay above the indicative threshold until 2031. The latter scenario illustrates the vulnerability of Lao P.D.R.'s debt sustainability to a possible sharp decline in copper and gold prices.

9. **Debt dynamics are worse under an alternative scenario in which key variables are at their historical averages.** Through 2014, debt dynamics are more favorable under this "historical scenario" as it takes into account the stronger increase in the GDP deflator in U.S. dollar terms (reflecting the nominal appreciation of the kip) experienced during 2001–10. In later years, this effect is outweighed by the higher historical average of the current account deficit (13.6 percent of GDP per annum compared to 8.5 percent of GDP per

[7] The most extreme stress test is defined as the bound test resulting in the most extreme deterioration of the debt burden indicator after 10 years.

annum in the baseline), and the lower historical average for FDI (4.1 percent of GDP per annum compared to 8.7 percent of GDP per annum in the baseline). This implies that for each year the historical scenario assumes almost 10 percentage points of GDP more debt accumulation than the baseline, which would not be sustainable in the long run. Therefore, the historical scenario illustrates the vulnerability to a decline in FDI inflows from the high levels of the past five years, which substantially exceed the 10-year historical average. One obvious mitigating factor is that FDI inflows are a major financing source of Lao P.D.R.'s large current account deficits. Therefore, with lower FDI inflows the current account deficit that would need to be financed would be commensurately lower as well, obviating the need for additional debt financing.

10. **Lao P.D.R.'s external debt dynamics are highly sensitive to assumptions regarding investment and performance of the resource sector.** Large resource-related projects now account for some 10 percent of GDP, with this share expected to nearly double over the medium term. In addition, the Lao P.D.R. economy remains exposed to fluctuations in international copper and gold prices as well as the economic outlook in neighboring countries (e.g., Thailand, Vietnam, and China). Lower growth in Lao P.D.R. and a weaker balance of payments would worsen debt dynamics. Cautious assessment and monitoring of large-scale projects will be required to mitigate the risks posed to external and public debt sustainability, especially if some of these projects may be financed from commercial sources such as bonds backed by future revenues.

11. **A recent study by the staff of the IMF and the World Bank found that Lao P.D.R. is one of the countries that is currently judged to be at a high risk of debt distress where modest but sustained improvements in policies and institutions could significantly reduce debt vulnerabilities** (see http://www.imf.org/external/np/pp/eng/2010/040110.pdf). Lao P.D.R.'s CPIA score improved to 3.28 last year. Going forward, if the CPIA score continues to improve, Lao P.D.R. could be classified as a "medium performer." In that case, higher indicative thresholds would apply, possibly causing the debt distress assessment of Lao P.D.R. to change.

B. Public Sector Debt Sustainability

12. **Under the baseline scenario, the PV of total PPG debt in percent of GDP and in percent of revenue are both projected to decline over the medium term** (Figure 2 and Table 2), in line with the previous DSA's projections. The projected build up of domestic debt is now smaller, mostly reflecting the strong revenue performance in FY10 and the improved outlook for resource revenue. Domestic debt is projected to decline from 7 percent in 2010 to about 3 percent of GDP in 2016. Similarly, the debt service-to-GDP ratio is also projected to decline over the projection period.

13. **Public debt ratios are particularly sensitive to a real depreciation of the kip over the medium term** (Figure 2, Table 4). A one-time 30 percent real depreciation of the kip in

2012 would immediately raise the PV of public debt-to-GDP ratio and the PV of public debt-to-revenue ratio to 54 and 280 percent, respectively, before both indicators taper off. The impact on the debt service-to-revenue ratio is also large, leading to an increase to around 14 percent in 2013, while the impact would also be more persistent over the longer term. It should be noted that this scenario is likely to overstate risks given that a significant share of GDP, including most of the resource GDP, is earned in foreign currency.

14. **Contingent fiscal liabilities could also worsen public debt ratios.** The settlement of arrears and debts to contractors, related to public investment projects implemented by local governments and the recapitalization of the state-owned commercial banks could lead to a rise in recorded domestic public debt. In the absence of comprehensive data it would seem that the fifth bound test in Table 4 which considers the effect of a 10 percent of GDP increase in other debt-creating flows provides some indication of the possible effect of a resolution of relevant contingent fiscal liabilities.

15. **Alternative scenarios point to less positive debt dynamics, especially over the longer term.** The first alternative scenario puts key variables (real GDP growth and the primary balance) at historical averages, and hence primary fiscal deficits about 1.8 percentage points of GDP higher than in the baseline scenario. In this scenario, the PV of public debt-to-GDP ratio rises above 50 percent of GDP by 2031 (grey dashed line in Figure 2). The second alternative scenario keeps the primary balance unchanged from the level projected for 2011 (red dashed line in Figure 2). Given that this level (1.7 percent of GDP) is much smaller than the 10-year average of the primary deficit (3.4 percent of GDP) used in the first alternative scenario, the outlook for debt ratios would improve but remain above the levels in the baseline scenario. These scenarios illustrate the importance of further fiscal consolidation.

16. **Under the baseline, it is assumed that the BoL phases out its quasi-fiscal activities.** During the past few years, the BoL has played an active role in financing local governments' infrastructure expenditures. The authorities announced in 2009 that they had decided to stop signing new loan commitments. Should the resulting envisaged phasing out of BoL lending not materialize, for instance if FDI and ODA come in lower than projected in the government's plans for 2011–15 and the government calls again on the BoL to fill the resulting "investment financing gap," the public debt dynamics could be significantly worse.

IV. The Authorities' View

17. **The authorities broadly agreed with the overall assessment and indicated that they were in the process of modernizing their debt management.** They acknowledged that the external debt data provided for this DSA might be inadequate[8] and they indicated that

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[8] Government debt records cannot be easily reconciled with creditor statements. Moreover, debt data of state-owned enterprises is not readily available. Lao P.D.R. is currently installing the DMFAS debt recording system, which is expected to improve the quality of debt records going forward.

they were analyzing what would be an appropriate level of borrowing each year. At the same time, the authorities believe that an important part of the external debt is related to viable large projects in the resource sector, and will generate high economic returns upon completion.[9] In addition, the relatively long maturity profile of the loans also helps mitigate risks of debt distress.

V. CONCLUSION

18. **While Lao P.D.R. has made progress in reducing its external and public debt burden, it still faces a high risk of debt distress.** Debt dynamics reflect current and planned large-scale investments in hydropower and mining projects that will only deliver returns over the medium term. The outlook is particularly sensitive to large swings of the exchange rate, highlighting the importance of maintaining macroeconomic stability and deepening structural reforms. It is also sensitive to fluctuations in exports earnings, and in particular commodity prices, and lack of fiscal consolidation. That said, the high level of concessionality of official borrowing keeps debt service ratios relatively contained.

19. **External borrowing should normally be obtained on concessional terms and fiscal and quasi-fiscal liabilities should be carefully managed, to further create buffers against vulnerabilities.** Continued prudent debt management, as well as cautious assessment and monitoring of large-scale projects, will be required to mitigate the risks posed to external and public debt sustainability. Fiscal risk could arise if these projects fail to generate the expected returns, including to the government's own equity stakes. The BoL should follow through on its earlier commitment to exit from direct lending to local governments. Improving debt management capacity and developing a medium-term borrowing strategy for the government, including for resource sector activity, as well as greater disclosure of borrowing plans (particularly with regard to the large loan amounts contracted with China), would substantially enhance the assessment of debt sustainability. In light of the high risk of debt distress, recourse to nonconcessional external financing should be limited to viable projects. And efforts should be made to build capacity and establish governance structures to assess the viability of projects.

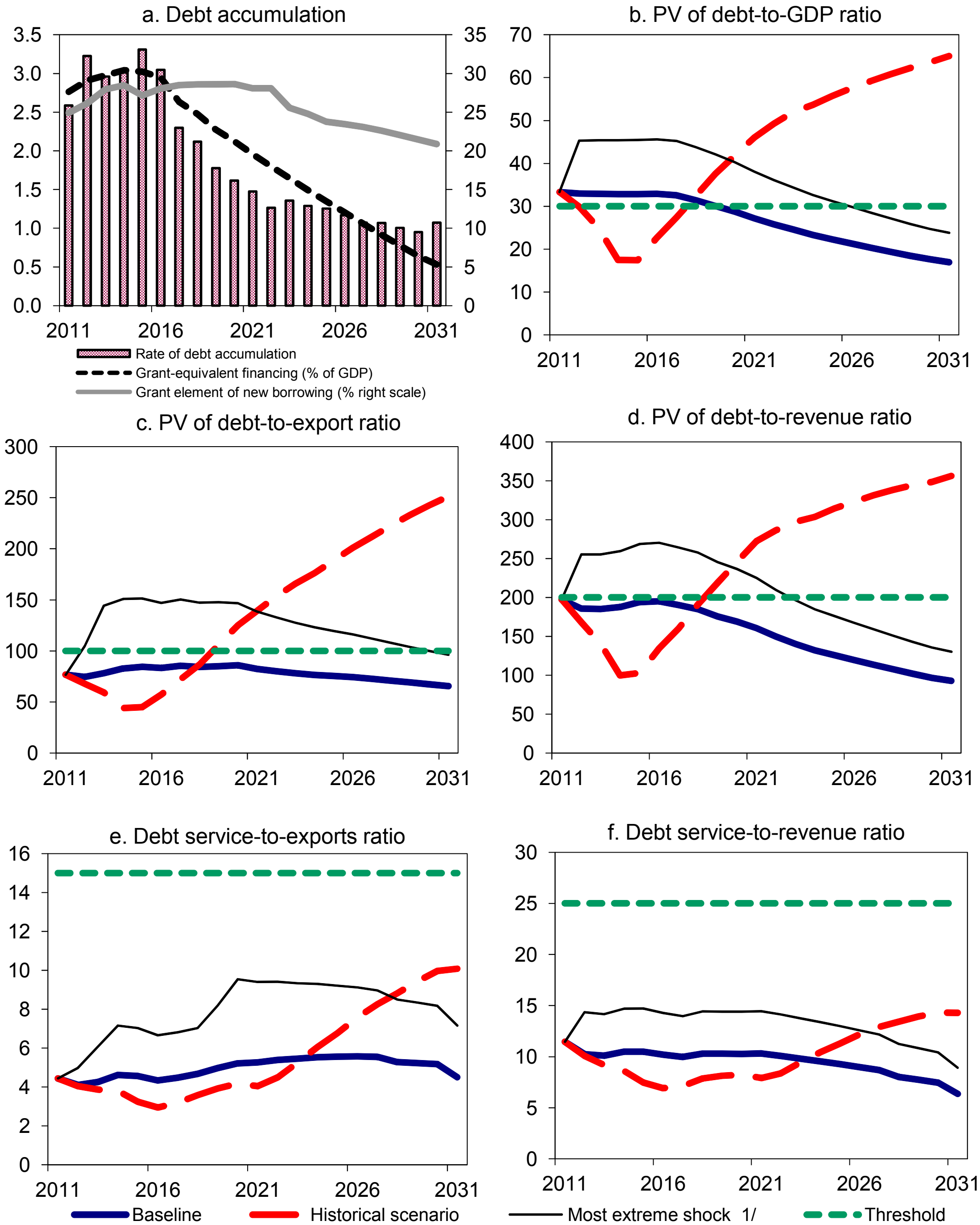
[9] Viable projects are projects in which the rate of return exceeds the cost of financing or the net present value of future income exceeds the net present value of borrowing.

Box 1: Baseline Scenario—Underlying Assumptions (2011–31)

The baseline macroeconomic framework assumes that the economy will be underpinned by further development of Lao P.D.R.'s potential in hydropower and mining, supported by reforms to further the transition to a market economy and a strengthening of macroeconomic policy frameworks.

- **Real GDP growth** is projected to average 7.7 percent in 2011–16. The near-term outlook is boosted by expanding production of gold, copper, and electricity, and work on the US$3.7 billion Hongsa Lignite mining and power station is expected to start operations in 2015–16. In addition, the improved outlook for tourism and agriculture and FDI in these sectors will also support growth. Over the longer term, assumed structural changes and reforms would create an enabling environment, broadening the sources of growth. Real GDP growth is expected to moderate to 6.4 percent on average in 2017–31 as the resource sector matures. Over time, the share of agriculture in GDP declines, as the transition to a market-based economy leads to an increasing share of industry and services. Graduation from low-income status could be achieved in the second half of the projection period.
- The **copper and gold price** projections through 2016 are based on the WEO projections as of May 2011 and are assumed constant in real terms afterward. While the WEO projects a steady rise in gold price through 2016, copper prices are projected to soften to US$6,700 per ton by 2016, down from US$9,000 in 2011.
- **Inflation** could reach 10 percent in the coming months, reflecting high food and fuel prices and strong second-round effects amid rapidly rising domestic demand. Over the medium term, inflation is projected to moderate to about 4 percent.
- The **balance of payments** will go through large swings, reflecting development of the resource sector. The external current account deficit is projected to narrow considerably in the long run. The nonresource current account would slightly deteriorate over the next decade reflecting the increasing cost of industrialization, before moderating over the longer term, while the resource current account will turn to surplus in 2016 as large projects are completed and start the operating phase. The assumed pick up in nonresource exports and services is driven by strengthened competitiveness and regional integration, supported by improvements in the investment climate, a streamlining of business regulations, and meeting trade commitments. The overall external position is expected to strengthen over time, and the international reserve position will gradually improve. Private capital inflows in the form of FDI are expected to remain high through the first half of the projection period as large new projects get under way before they gradually decline to a more sustainable level.
- **External financing** is assumed to remain largely on concessional terms over the medium term. Over the long term, grant financing decreases with economic development.
  - ***Multilateral creditors:*** Projected loan disbursements in the medium term are relatively low since IDA and the AsDB have a pipeline of operations financed on grant terms. Over the longer term, grant financing decreases with economic development and a moderate increase in project loans is assumed.
  - ***Bilateral creditors:*** For 2011–12, projected loan disbursements increase as donors provide support to the government's development agenda. Over the medium and longer term, greater participation by new emerging market creditors leads bilateral finance to take on an increasing role, including for onlending purposes to SOEs. The undisbursed US$958 million in loans from China is assumed to have $80 million disbursed in 2011 and the rest being evenly disbursed during 2012–16. The terms assumed are 6-year grace period, 15-year repayment period, and an interest rate of 1.5 percent.
  - ***Commercial creditors:*** Over the medium term, commercial disbursements are relatively small, principally used to finance a portion of the government's equity stake participation in new hydropower projects. The DSA assumes that disbursements on the government's borrowing to finance its equity stake in the Hongsa Lignite project will take place in 2014 and 2015.
- **Fiscal policy** is projected to remain on a consolidation path from the 4.8 percent of GDP overall deficit recorded in FY10. The deficit is projected to narrow to about 2.6 percent of GDP in FY11 and following a further narrowing in FY12–13 to revert back to that level in the medium term. The consolidation is expected to be supported by rising resource sector revenues thanks to strong commodity prices.
- **Domestic debt** decreases over the medium term driven by repayments of the lending from the BoL. It increases in the long term as net external financing in percent of GDP declines and a larger share of budget deficits is financed domestically.

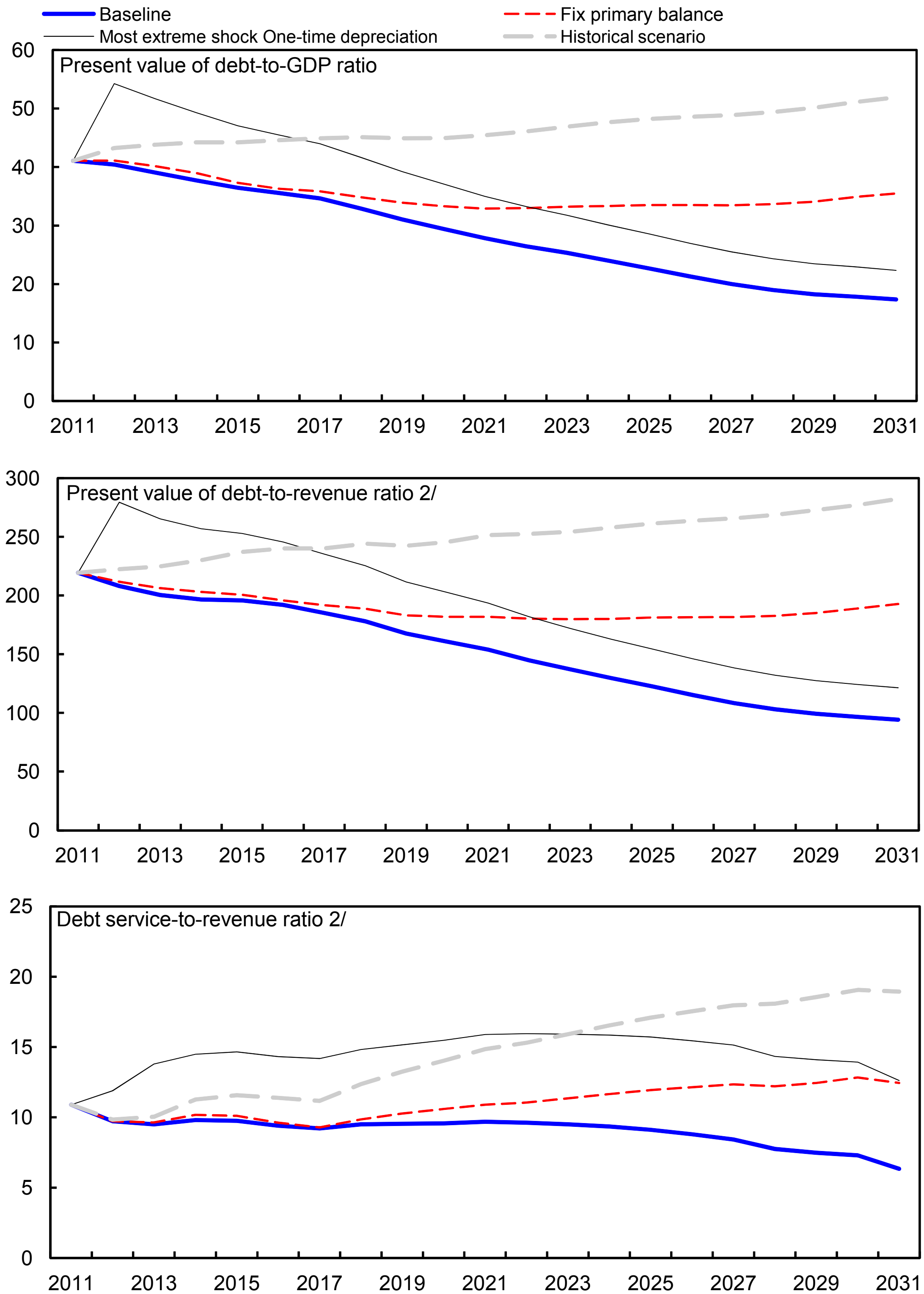
Figure 1. Lao P.D.R.: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2011–31 1/



Sources: Lao P.D.R. authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2021. In figure b. it corresponds to a One-time depreciation shock; in c. to an Exports shock; in d. to a One-time depreciation shock; in e. to an Exports shock; and in figure f. to a One-time depreciation shock.

Figure 2. Lao P.D.R.: Indicators of Public Debt Under Alternative Scenarios, 2011–31 1/



Sources: Lao P.D.R. authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2021.
2/ Revenues are defined inclusive of grants.

Table 1. Lao P.D.R.: External Debt Sustainability Framework, Baseline Scenario, 2008–31 1/

(In percent of GDP, unless otherwise indicated)

	Actual					Projections									
	2008	2009	2010	Historical Average 1/	Standard Deviation 1/	2011	2012	2013	2014	2015	2016	2011–16 Average	2021	2031	2017–31 Average
External debt (nominal) 2/	**96.7**	**102.3**	**92.2**			**86.3**	**90.0**	**97.1**	**108.6**	**109.3**	**104.9**		**73.7**	**36.3**	
Of which: Public and publicly-guaranteed (PPG)	54.0	55.4	51.8			46.7	45.7	45.3	45.1	44.7	44.4		36.4	22.0	
Change in external debt	-3.7	5.6	-10.1			-5.9	3.7	7.1	11.5	0.7	-4.4		-6.9	-2.6	
Identified net debt-creating flows	-10.3	8.4	-6.4			6.3	7.3	10.6	15.0	4.3	-2.0		-4.6	-3.3	
Noninterest current account deficit	**17.3**	**19.7**	**16.1**	**13.6**	**4.1**	**17.6**	**18.1**	**20.6**	**26.8**	**21.6**	**14.7**		**10.7**	**4.0**	8.5
Noninterest current account deficit	16.9	18.6	15.4			17.8	18.3	21.2	28.5	23.5	16.8		12.1	4.5	
Exports	38.1	34.3	42.6			43.5	44.1	42.1	39.7	38.9	39.5		33.0	25.9	
Imports	55.0	52.9	58.0			61.3	62.5	63.4	68.2	62.4	56.3		45.2	30.4	
Net current transfers (negative = inflow)	-2.7	-2.4	-2.8	-3.1	0.9	-2.7	-2.7	-2.7	-2.7	-2.7	-2.7		-2.2	-1.8	-2.1
Of which: Official	-1.5	-1.7	-1.7			-1.7	-1.7	-1.7	-1.7	-1.7	-1.7		-1.2	-0.1	
Other current account flows (negative = net inflow)	3.1	3.5	3.4			2.5	2.5	2.1	1.1	0.8	0.7		0.8	1.3	
Net FDI (negative = inflow)	**-8.3**	**-7.6**	**-10.8**	**-4.1**	**3.7**	**-6.9**	**-5.9**	**-5.6**	**-6.7**	**-10.8**	**-12.2**		**-11.6**	**-5.6**	-8.8
Endogenous debt dynamics 3/	**-19.4**	**-3.7**	**-11.6**			**-4.5**	**-4.8**	**-4.4**	**-5.1**	**-6.5**	**-4.6**		**-3.8**	**-1.7**	
Contribution from nominal interest rate	1.2	1.2	2.1			1.8	1.5	1.4	1.5	1.3	2.8		1.4	0.4	
Contribution from real GDP growth	-6.2	-7.0	-7.0			-6.2	-6.4	-5.9	-6.6	-7.8	-7.4		-5.2	-2.2	
Contribution from price and exchange rate changes	-14.3	2.0	-6.6			…	…	…	…	…	…		…	…	
Residual (3–4) 4/	**6.6**	**-2.8**	**-3.8**			**-12.2**	**-3.7**	**-3.4**	**-3.5**	**-3.6**	**-2.4**		**-2.2**	**0.7**	
Of which: exceptional financing	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Present value (PV) of external debt 5/	...	...	77.0			73.0	77.3	84.7	96.4	97.4	93.3		64.5	31.2	
PV of external debt 5/	...	...	180.7			167.8	175.0	201.1	242.9	250.4	236.2		195.2	120.6	
PV of PPG external debt	**...**	**...**	**36.6**			**33.3**	**33.0**	**32.9**	**32.9**	**32.8**	**32.9**		**27.2**	**17.0**	
In percent of exports	**...**	**...**	**85.9**			**76.7**	**74.7**	**78.1**	**82.8**	**84.4**	**83.2**		**82.3**	**65.7**	
In percent of government revenues	**...**	**...**	**222.1**			**197.7**	**185.7**	**185.0**	**187.8**	**194.0**	**195.0**		**160.8**	**93.0**	
Debt service-to-exports ratio (in percent)	**11.0**	**11.8**	**13.4**			**12.8**	**10.8**	**10.3**	**12.5**	**12.0**	**14.8**		**18.8**	**11.1**	
PPG debt service-to-exports ratio (in percent)	**4.3**	**4.9**	**4.5**			**4.4**	**4.1**	**4.3**	**4.6**	**4.6**	**4.3**		**5.3**	**4.5**	
PPG debt service-to-revenue ratio (in percent)	**11.4**	**10.8**	**11.5**			**11.5**	**10.2**	**10.1**	**10.5**	**10.5**	**10.2**		**10.3**	**6.4**	
Total gross financing need (in billions of U.S. dollars)	0.7	0.9	0.7			1.3	1.5	1.9	2.7	1.8	1.1		1.1	0.7	
Noninterest current account deficit that stabilizes debt ratio	21.0	14.1	26.2			23.5	14.4	13.5	15.3	21.0	19.1		17.6	6.6	
Key macroeconomic assumptions															
Real GDP growth (in percent)	7.8	7.6	7.9	7.1	1.1	8.3	8.4	7.1	7.4	7.9	7.4	7.7	7.1	6.2	6.4
GDP deflator in U.S. dollar terms (change in percent)	16.6	-2.1	6.9	7.3	7.7	12.8	4.5	1.6	1.8	2.0	1.6	4.0	3.8	3.8	3.6
Effective interest rate (percent) 6/	1.5	1.4	2.3	1.8	0.3	2.4	2.0	1.7	1.6	1.3	2.8	2.0	2.0	1.3	1.8
Growth of exports of G&S (U.S. dollar terms, in percent)	26.3	-5.2	43.4	16.5	21.7	24.8	15.0	3.8	3.0	7.9	10.9	10.9	9.7	8.8	7.1
Growth of imports of G&S (U.S. dollar terms, in percent)	30.7	1.4	26.7	18.4	13.4	29.0	15.4	10.3	17.6	0.8	-1.6	11.9	7.8	6.8	5.7
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	24.9	26.1	27.9	28.5	27.2	28.0	27.1	28.1	20.9	25.2
Government revenues (excluding grants, in percent of GDP)	14.3	15.6	16.5			16.9	17.7	17.8	17.5	16.9	16.9		16.9	18.3	17.6
Aid flows (in billions of U.S. dollars) 7/	0.1	0.1	0.1			0.2	0.2	0.3	0.3	0.4	0.4		0.5	0.3	
Of which: Grants	0.1	0.1	0.1			0.1	0.1	0.2	0.2	0.2	0.2		0.2	0.1	
Of which: Concessional loans	0.0	0.0	0.0			0.0	0.1	0.1	0.1	0.2	0.2		0.2	0.2	
Grant-equivalent financing (in percent of GDP) 8/	...	...	...			2.8	2.9	3.0	3.0	3.0	3.0		2.0	0.5	1.5
Grant-equivalent financing (in percent of external financing) 8/	...	...	...			50.2	45.5	47.2	47.2	45.6	47.1		49.0	26.2	41.8
Memorandum items:															
Nominal GDP (in billions of U.S. dollars)	5.3	5.6	6.5			7.9	8.9	9.7	10.6	11.7	12.8		20.4	54.4	
Nominal dollar GDP growth	25.7	5.4	15.4			22.1	13.3	8.8	9.3	10.0	9.1	12.1	11.2	10.3	10.2
PV of PPG external debt (in billions of U.S. dollars)			2.5			2.6	2.9	3.1	3.4	3.8	4.2		5.5	9.2	
(PVt-PVt-1)/GDPt-1 (in percent)						2.6	3.2	3.0	3.0	3.3	3.0	3.0	1.5	1.1	1.4
Gross remittances (in billions of U.S. dollars)	0.1	0.0	0.1			0.1	0.1	0.1	0.1	0.1	0.1		0.2	0.9	
PV of PPG external debt (in percent of GDP + remittances)	...	...	36.2			33.0	32.6	32.6	32.5	32.5	32.5		26.9	16.7	
PV of PPG external debt (in percent of exports + remittances)	...	...	83.7			74.8	72.9	76.2	80.7	82.2	81.1		79.7	61.7	
Debt service of PPG external debt (in percent of exports + remittances)	...	...	4.4			4.3	4.0	4.2	4.5	4.4	4.2		5.1	4.2	

Sources: Lao P.D.R. authorities; and staff estimates and projections.

1/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

2/ Includes both public and private sector external debt. The years in the table refer to calendar years.

3/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, and ρ = growth rate of GDP deflator in U.S. dollar terms.

4/ Includes exceptional financing (i.e., changes in arrears and debt relief); changes in gross foreign assets; and valuation adjustments. For projections, also includes contribution from price and exchange rate changes.
The residual is particularly large in 2011 because the nominal bilateral US$/kip-exchange rate is projected to remain constant in 2011, unlike in the outer years.

5/ Assumes that PV of private sector debt is equivalent to its face value.

6/ Current-year interest payments divided by previous period debt stock.

7/ Defined as grants, concessional loans, and debt relief.

8/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the PV of new debt).

Table 2. Lao P.D.R.: Public Sector Debt Sustainability Framework, Baseline Scenario, 2008–31

(In percent of GDP, unless otherwise indicated)

	Actual					Projections									
					Standard							2011–16			2017–31
	2008	2009	2010	Average 1/	Deviation 1/	2011	2012	2013	2014	2015	2016	Average	2021	2031	Average
Public sector debt 2/	56.7	61.0	58.8			54.4	53.1	51.4	49.9	48.3	47.1		37.1	22.4	
Of which: Foreign-currency denominated	54.0	55.4	51.8			46.7	45.7	45.3	45.1	44.7	44.4		36.4	22.0	
Change in public sector debt	-3.1	4.3	-2.2			-4.4	-1.3	-1.7	-1.5	-1.6	-1.2		-2.2	-0.9	
Identified debt-creating flows	-8.5	5.0	-5.5			-6.1	-4.0	-2.8	-2.3	-2.0	-1.6		-3.2	-2.3	
Primary deficit	3.2	6.1	3.6	3.4	1.2	1.7	1.0	1.2	1.5	2.0	1.8	1.5	0.1	-0.5	0.0
Revenue and grants	16.0	17.9	18.7			18.7	19.4	19.5	19.2	18.6	18.5		18.1	18.4	
Of which: Grants	1.7	2.3	2.3			1.9	1.7	1.7	1.7	1.7	1.7		1.2	0.1	
Primary (noninterest) expenditure	19.2	24.0	22.4			20.4	20.4	20.7	20.7	20.6	20.3		18.2	17.9	
Automatic debt dynamics	-11.6	-0.9	-9.2			-7.8	-4.9	-4.0	-3.8	-4.0	-3.4		-3.3	-1.8	
Contribution from interest rate/growth differential	-4.9	-3.7	-4.4			-4.8	-4.5	-3.7	-3.6	-3.7	-3.4		-2.6	-1.3	
Of which: Contribution from average real interest rate	-0.6	0.3	0.1			-0.3	-0.2	-0.1	-0.1	-0.1	0.0		0.0	0.0	
Of which: Contribution from real GDP growth	-4.3	-4.0	-4.5			-4.5	-4.2	-3.5	-3.5	-3.7	-3.3		-2.6	-1.4	
Contribution from real exchange rate depreciation	-6.7	2.8	-4.8			-2.9	-0.5	-0.4	-0.2	-0.3	0.0		...	...	
Other identified debt-creating flows	-0.1	-0.3	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	-0.1	-0.3	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Debt relief (HIPC and other)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other (specify, e.g., bank recapitalization)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Residual, including asset changes	5.4	-0.6	3.3			1.7	2.7	1.1	0.8	0.4	0.4		1.0	1.4	
Other sustainability indicators	…	…	43.6			41.1	40.4	39.0	37.7	36.5	35.6		27.8	17.3	
Of which: Foreign-currency denominated	…	…	36.6			33.3	33.0	32.9	32.9	32.8	32.9		27.2	17.0	
Of which: External	...	...	36.6			33.3	33.0	32.9	32.9	32.8	32.9		27.2	17.0	
Of which: External	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 3/	5.6	8.8	6.2			3.9	2.9	3.0	3.4	3.8	4.1		2.3	0.7	
PV of public sector debt-to-revenue and grants ratio (in percent)	…	…	232.8			219.5	208.2	200.5	196.6	195.9	192.0		153.9	94.2	
PV of public sector debt-to-revenue ratio (in percent)	…	…	264.7			243.6	227.9	219.5	215.5	215.4	210.9		164.5	94.9	
Of which: External 4/	…	…	222.1			197.7	185.7	185.0	187.8	194.0	195.0		160.8	93.0	
Debt service-to-revenue and grants ratio (in percent) 5/	11.1	10.2	10.9			10.9	9.7	9.5	9.8	9.8	9.4		9.7	6.3	
Debt service-to-revenue ratio (in percent) 5/	12.5	11.7	12.5			12.1	10.6	10.4	10.8	10.7	10.3		10.4	6.4	
Primary deficit that stabilizes the debt-to-GDP ratio	6.3	1.8	5.9			6.1	2.2	2.9	3.0	3.6	3.0		2.4	0.3	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	7.8	7.6	7.9	7.1	1.1	8.3	8.4	7.1	7.4	7.9	7.4	7.7	7.1	6.2	6.4
Average nominal interest rate on forex debt (in percent)	1.0	0.9	1.4	0.9	0.3	1.6	1.6	1.6	1.8	1.8	1.8	1.7	1.8	1.8	1.9
Average real interest rate on domestic debt (in percent)	3.9	10.0	-2.4	11.5	13.3	-5.9	-5.3	-4.3	-3.7	-3.6	-3.2	-4.3	-2.6	-1.9	-0.6
Real exchange rate depreciation (in percent, + indicates depreciation)	-12.6	5.6	-9.3	-4.9	8.6	-6.1	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	6.0	-4.3	5.6	7.9	5.4	8.1	6.7	5.3	4.8	4.6	4.0	5.6	4.0	4.0	4.0
Growth of real primary spending (deflated by GDP deflator, in percent)	0.2	0.3	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
Grant element of new external borrowing (in percent)	...	...	...	…	…	24.9	26.1	27.9	28.5	27.2	28.0	27.1	28.1	20.9	...

Sources: Lao P.D.R. authorities; and staff estimates and projections.

1/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

2/ The public sector debt represents general government gross debt. The fiscal year for Lao P.D.R. is October–September, but the DSA is done based on calendar year data.

3/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period.

4/ Revenues excluding grants.

5/ Debt service is defined as the sum of interest and amortization of medium- and long-term debt.

Table 3. Lao P.D.R.: Sensitivity Analysis for Key Indicators of Public and Publicly-Guaranteed External Debt, 2011–31

(In percent)

	Projections							
	2011	2012	2013	2014	2015	2016	**2021**	2031
Present value of debt-to-GDP ratio								
Baseline	33	33	33	33	33	33	**27**	17
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	33	30	25	17	17	23	**46**	65
A2. New public sector loans on less favorable terms in 2011–31 2/	33	33	35	36	37	38	**35**	26
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	33	33	33	33	33	34	**28**	18
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	33	38	46	45	44	44	**34**	19
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	33	34	35	35	35	35	**29**	18
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	33	37	41	41	40	40	**32**	18
B5. Combination of B1–B4 using one-half standard deviation shocks	33	39	43	42	42	41	**33**	19
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	33	45	45	45	45	46	**38**	24
Present value of debt-to-exports ratio								
Baseline	77	75	78	83	84	83	**82**	66
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	77	68	59	44	45	57	**139**	251
A2. New public sector loans on less favorable terms in 2011–31 2/	77	76	82	90	95	96	**105**	99
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	77	73	77	82	83	82	**82**	66
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	77	105	144	151	151	147	**138**	96
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	77	73	77	82	83	82	**82**	66
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	77	83	97	102	103	101	**96**	70
B5. Combination of B1–B4 using one-half standard deviation shocks	77	93	108	113	113	111	**105**	76
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	77	73	77	82	83	82	**82**	66
Present value of debt-to-revenue ratio								
Baseline	198	186	185	188	194	195	**161**	93
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	198	168	140	100	103	134	**272**	356
A2. New public sector loans on less favorable terms in 2011–31 2/	198	188	195	204	217	224	**206**	140
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	198	186	188	191	198	199	**166**	96
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	198	215	258	258	262	260	**204**	103
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	198	191	195	198	205	206	**172**	99
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	198	208	231	232	237	236	**188**	99
B5. Combination of B1–B4 using one-half standard deviation shocks	198	219	241	242	247	246	**195**	101
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	198	255	255	260	269	270	**225**	130

Table 3. Lao P.D.R.: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2011–31 (concluded)

(In percent)

	Projections							
	2011	2012	2013	2014	2015	2016	2021	2031
Debt service-to-exports ratio								
Baseline	4	4	4	5	5	4	**5**	5
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	4	4	4	4	3	3	**4**	10
A2. New public sector loans on less favorable terms in 2011–31 2/	4	4	4	5	5	5	**7**	7
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	4	4	4	5	5	4	**5**	4
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	4	5	6	7	7	7	**9**	7
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	4	4	4	5	5	4	**5**	4
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	4	4	5	5	5	5	**6**	5
B5. Combination of B1–B4 using one-half standard deviation shocks	4	4	5	6	5	5	**7**	6
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	4	4	4	5	5	4	**5**	4
Debt service-to-revenue ratio								
Baseline	11	10	10	10	10	10	**10**	6
A. Alternative scenarios								
A1. Key variables at their historical averages in 2011–31 1/	11	10	9	9	7	7	**8**	14
A2. New public sector loans on less favorable terms in 2011–31 2/	11	10	10	11	12	12	**14**	10
B. Bound tests								
B1. Real GDP growth at historical average minus one standard deviation in 2012–13	11	10	10	11	11	11	**11**	7
B2. Export value growth at historical average minus one standard deviation in 2012–13 3/	11	10	11	12	12	12	**14**	8
B3. U.S. dollar GDP deflator at historical average minus one standard deviation in 2012–13	11	11	11	11	11	11	**11**	7
B4. Net nondebt creating flows at historical average minus one standard deviation in 2012–13 4/	11	10	11	12	12	11	**13**	7
B5. Combination of B1–B4 using one-half standard deviation shocks	11	11	11	12	12	12	**13**	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2012 5/	11	14	14	15	15	14	**14**	9
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	24	24	24	24	24	24	**24**	24

Sources: Lao P.D.R. authorities; and staff estimates and projections.

1/ Variables include real GDP growth, growth of GDP deflator (in U.S. dollar terms), noninterest current account in percent of GDP, and nondebt creating flows.
2/ Assumes that the interest rate on new borrowing is by 2 percentage points higher than in the baseline, while grace and maturity periods are the same as in the baseline.
3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).
4/ Includes official and private transfers and FDI.
5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.
6/ Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 2.

Table 4. Lao P.D.R.: Sensitivity Analysis for Key Indicators of Public Debt 2011–31

	Projections							
	2011	2012	2013	2014	2015	2016	2021	2031
Present value of debt-to-GDP ratio								
Baseline	41	40	39	38	36	36	28	17
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	41	43	44	44	44	45	45	52
A2. Primary balance is unchanged from 2011	41	41	40	39	37	36	33	35
A3. Permanently lower GDP growth 1/	41	41	39	38	37	37	30	24
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	41	42	41	40	40	39	33	24
B2. Primary balance is at historical average minus one standard deviations in 2012–13	41	44	46	44	42	41	32	20
B3. Combination of B1–B2 using one half standard deviation shocks	41	44	45	44	43	42	34	24
B4. One-time 30 percent real depreciation in 2012	41	54	52	49	47	45	35	22
B5. 10 percent of GDP increase in other debt-creating flows in 2012	41	50	48	46	45	43	34	20
Present value of debt-to-revenue ratio								
Baseline	219	208	201	197	196	192	154	94
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	219	222	225	230	237	240	252	282
A2. Primary balance is unchanged from 2011	219	212	206	203	201	196	182	193
A3. Permanently lower GDP growth 1/	219	209	202	199	199	197	167	131
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	219	214	211	210	212	210	181	133
B2. Primary balance is at historical average minus one standard deviations in 2012–13	219	226	235	230	228	223	177	106
B3. Combination of B1–B2 using one half standard deviation shocks	219	226	233	230	230	227	189	129
B4. One-time 30 percent real depreciation in 2012	219	280	265	257	253	246	194	121
B5. 10 percent of GDP increase in other debt-creating flows in 2012	219	257	247	241	240	234	186	111
Debt service-to-revenue ratio								
Baseline	11	10	10	10	10	9	10	6
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	11	10	10	11	12	11	15	19
A2. Primary balance is unchanged from 2011	11	10	10	10	10	10	11	12
A3. Permanently lower GDP growth 1/	11	10	10	10	10	10	10	9
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2012–13	11	10	10	10	10	10	11	9
B2. Primary balance is at historical average minus one standard deviations in 2012–13	11	10	10	12	12	11	12	8
B3. Combination of B1–B2 using one half standard deviation shocks	11	10	10	12	12	11	12	9
B4. One-time 30 percent real depreciation in 2012	11	12	14	14	15	14	16	13
B5. 10 percent of GDP increase in other debt-creating flows in 2012	11	10	11	14	11	11	13	8

Sources: Lao P.D.R. authorities; and staff estimates and projections.
1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.